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How Many Videos Are Cited in Academic Research? An Analysis of Indian Scholarly Publications

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ABSTRACT

This research aims to measure the occurrence of videos cited in the research publications by Indian researchers. More specifically, we investigated the videos associated with scholarly publications and analysed the usefulness of those videos using computational methods. The bibliographic metadata was gathered from Scopus using advanced search techniques. A total of 2,121 publications cited 3,191 online videos during 2008-2022, but 2,736 videos were considered for further analysis due to discrepancies in video IDs. The Google API for YouTube was used to extract video metadata from YouTube, and the raw data was edited and extracted using OpenRefine, an open-source data carpentry tool. The final dataset was analysed and visualised using the R program. The result indicates a linear growth of cited videos from 2008-2018; an exponential increase is observed from 2019 onwards. Most videos are cited from the Computer Science and Social Science disciplines, and journal articles are the most preferred document types that mention videos. The Education category videos are cited the most, and the channel TEDx Talks produced the maximum number of cited videos in research publications. The overall study shows that YouTube is emerging as a significant source of information for research and educational purposes.

Keywords: YouTube; Data carpentry; Social media data; REST/API; YouTube Statistics; Altmetrics

1. INTRODUCTION

YouTube is a popular user-generated video-sharing site and has snowballed since its inspection in 2005 by employees of PayPal. After being acquired by Google in 2006, the site has grown in popularity daily and become the most visited site after Google[1]. According to YouTube[20], users watch billions of hours of video content daily, produce billions of views from 100+ countries worldwide, and can be navigated across 80 languages. The platform has produced more than 500 hours of content every minute. As of 2023, YouTube has 2.5 billion active users across the globe[7].

The videos are posted on the YouTube platform not only for entertainment purposes but also for acquiring helpful information regarding education and research[12]. Previous studies have demonstrated that the information provided on video-sharing sites is helpful for medical, science, and technology. For instance, Bora, *et al.*[2] showed that 70.3 % of video content posted about the Zika virus on the YouTube platform is informative. During the last few years, different Higher Educational Institutions (HEIs) across the globe have actively participated in producing YouTube-based educational content in the form of MOOCs[1,2,6,9]. In India, for instance, NPTEL[21], a joint venture of the Indian Institute of Science and seven Indian Institute of Technology (IITs), offers 600+ online certificate courses related to technical education for every semester in about 22 disciplines. Similarly, e-Yantra[22] is the product of IIT Bombay, which aims to create the next generation of embedded systems engineers with a practical outlook to help provide practical solutions to some real-world problems.

There is no research purpose if the results are not shared with others; hence, information dissemination is essential to scientific scholarship. The academic community actively participated in demonstrating their research findings in different forms, such as video abstract science popularisation. For example, the Journal of Visual Experiments[23] (JoVE) was the first scientific journal to publish peer-reviewed video content of lab experiments, tools, and techniques applied in the research. Similarly, the Journal of Number Theory has a channel named 'Journal Number Theory'[24] for video demonstrations of published research findings. These journals direct users to view the videos by mentioning the link in the article text. Gibney[3] stated that today, the text-based method of scientific publishing is insufficient to transfer the knowledge, and that's the root of the problem. Eventually, I think video will become one of the main

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methods of scientific publishing. Thus, videos are an important source of accruing knowledge in the scientific community. Some researchers pointed out that videos are as helpful as research articles across the scientific fields[5,12]. Therefore, this research explores the potential use of YouTube videos cited in scholarly communications by Indian scholars. More specifically, we examined video citations mentioned in the reference section of research publications using data carpentry tools and techniques.

2. LITERATURE REVIEW

Previous studies have proved that YouTube videos are essential for accruing knowledge in different domains. For instance, Bora, *et al.*[2] analysed YouTube videos on the Zika virus and found that 70.3 % of videos were informative in nature, whereas 5.9 % and 23.8 % of videos were related to personal experience and misleading, respectively. Kalayci, *et al.*[6] examined the quality of online videos about keratoplasty surgery and found that 33.3 % of videos discussed keratoplasty. The research concluded that the videos posted by healthcare professionals were more accurate and reliable.

Some previous literature also analysed scholarly use of online sources in research, including presentations, online videos[9], tweets[4], syllabi, news[8], websites[10,14], encyclopedias[11], etc. For example, Kousha, *et al.*[9] analysed 1,808 publications from the Scopus database during 2006-11 with at least one video link mentioned in the reference section. The discussed research found a steady growth of mentioning online videos, amongst which publications of disciplines like arts & humanities and social sciences have the most common. Haunschild & Bornmann[4] examined Twitter citations across scientific publications and found that social sciences, medical, and arts & humanities publications were mostly cited tweets. Li, *et al.*[11] explored how frequently Wikipedia and other encyclopedias were cited in scholarly publications. They found that "Wikipedia was by far the most cited encyclopedia, with up to 1 % of Scopus documents citing it in Computer Science. Citations to Wikipedia increased exponentially until 2010, then slowed down and started to decrease." Another comparative study between two encyclopedias on the chemical domain cited in research literature during 2000-2015 by Tomaszewski[16]. This research indicates that from 2000 to 2015, the frequency of encyclopedia citations almost doubled in the literature. A study on BBC news stories was cited in the research publications by Kousha and Thelwall[8].

Thus, the current body of literature indicates the potential use of online sources in academic research; however, there is no empirical study based on Indian publications. To address the research gap, it takes the quantitative approach and explores the online videos cited in the research publications by Indian academicians.

3. RESEARCH QUESTIONS

This research aims to measure the occurrence of videos cited in the research publications by Indian researchers. More specifically, we investigated the videos associated with scholarly publications and analysed the usefulness of those videos using computational methods. Based on the objectives, we designed the following research questions:

RQ1: Is OpenRefine capable of fetching metadata and related information from the YouTube platform? What is the mechanism for fetching and extracting YouTube data?

RQ2: How many videos are cited in scholarly publications from India? Is it varied by document types or disciplines? If so, which kinds of documents or disciplines are cited the most?

RQ3: What are the major video categories cited in scholarly works? What are the primary channels and videos that are cited in research publications?

4. METHODOLOGY

The bibliographic metadata related to this research was gathered from the Scopus database. We used the website search algorithm under the "References" (REF) search tab using "youtube.com/watch*". We followed this search query because all videos on YouTube start with "youtube.com/watch?v=" and are followed by unique video IDs. The search results were further limited to two additional filters: i) excluding the publication year 2023 because it is an incomplete year when the data has been gathered; ii) we focused only on the documents that were published with at least one affiliation from India. The search was made on August 5, 2023, using the search string:

WEBSITE(youtube.com/watch*) AND (EXCLUDE (PUBYEAR, 2003)) AND (LIMIT TO (AFFILCOUNTRY, "India"))

The search string retrieved 2,121 publications from India, with at least one cited video. We exported all the documents by applying all fields into two CSV files (because Scopus provides only 2,000 documents, including references at a time). Therefore, we uploaded those CSV files to OpenRefine for further analysis. We designed several GRELs for extracting specific data, which are given in Table 1: i) the URLs of videos had been extracted from the reference column of the publications (G1); ii) the video IDs from the URLs also extracted (G2). A total of 3,191 videos were mentioned across 2,121 publications from India.

Further, we extracted the details and descriptive statistics of video IDs from YouTube through Google API by fetching URLs through OpenRefine (G3). OpenRefine, formerly GoogleRefine, is a robust open-source program that can handle and show massive amounts of data simultaneously. With its spreadsheet-like appearance and database-like functionality, OpenRefine enables more comprehensive discovery capabilities than those of Microsoft Excel. In response, a JSON formatted test is retrieved against each video ID and stored in OpenRefine. Several GRELs (General Refine Expression

Language) have been developed to extract the desired data (G4-G9). The detailed methodology was discussed in the previous researchers[13,17,18]. We have found 460 incorrect YouTube IDs (for example, Lz1PIPrMzHc) because of typo errors in the original publications or were indexed incorrectly by Scopus. These false IDs were removed from the analysis. Finally, 2,731 videos were taken into consideration for further analysis. The final dataset was analysed and visualised using the R program.

Table 1. GRELs used for parsing YouTube video details from JSON format

S. No.	Data sources	Contents	Parsing GRELs
G1	Reference List	YouTube URL	filter(value.split(“,”),v,v.trim().startsWith(“https://www.youtube.com”)).join(“|”)
G2	URL	YouTube ID	value.replace(“https://www.youtube.com/watch?v=”,””)
G3	YouTube	REST/API Call	https://www.googleapis.com/youtube/v3/videos?id=+value+”&key=<YOUR KEY>& part=snippet,contentDetails,statistics,status”
G4		Category ID	value.parseJson().items[0].snippet.categoryId
G5		Channel Title	value.parseJson().items[0].snippet.channelTitle
G6		View Counts	value.parseJson().items[0].statistics.viewCount
G7	API Responses	Like Counts	value.parseJson().items[0].statistics.likeCount
G8		Comment Counts	value.parseJson().items[0].statistics.commentCount
G9		Video Duration	value.parseJson().items[0].contentDetails.duration. replace(“PT”,””). replace(“H”,”::”).replace(“M”,”:”).split(“S”,””)[0]

5. RESULTS

The obtained data was analysed using the computational methods. The entire analysis is divided into two subsequent parts. The first part discusses the details of publications that mentioned videos, and the second part focuses on a detailed overview of cited videos. The results of this study are systematically presented as follows:

5.1 Yearly Growth of Cited Videos

Descriptive statistics of video citations are necessary before conducting an in-depth analysis. Figure 1 reveals the yearly distribution of publications and respective video citations based on Scopus. It shows that the first video citation across scholarly publications occurred in 2008. Articles entitled “*Plans for Dharavi: Negotiating a reconciliation between a state-driven market redevelopment and residents' aspirations*” and “*NREGA and the death of tapas soren*” were the first two articles from India published in 2008 and have video citations. Since 2009, video citations across published literature have rapidly grown. On average, almost 183 videos are cited in publications every year. Nearly 54.89 % of videos are cited in the last three years (2020-22). We noticed that the video per publication (VPP) rate is 1.29 and the highest VPP (1.55) registered in the year 2013, lowest for 2008 (0.5) and 2009 (0.5). From 2020, we noticed an exponential growth of cited videos across the literature. The Covid-19 outbreak in 2019 was a growth booster of such activities.

5.2 Disciplinary Coverage of Cited Videos

Figure 2 shows the distribution of publications across Scopus subject areas (note that many papers are classified in more than one subject area). We noticed 27 subject fields are cited in online videos across publications from India, representing a total frequency of 3,945 publications. The highest percentage of publications comes from the Computer Science discipline, having 699 (17.72 %) publications. The list followed by Social Sciences

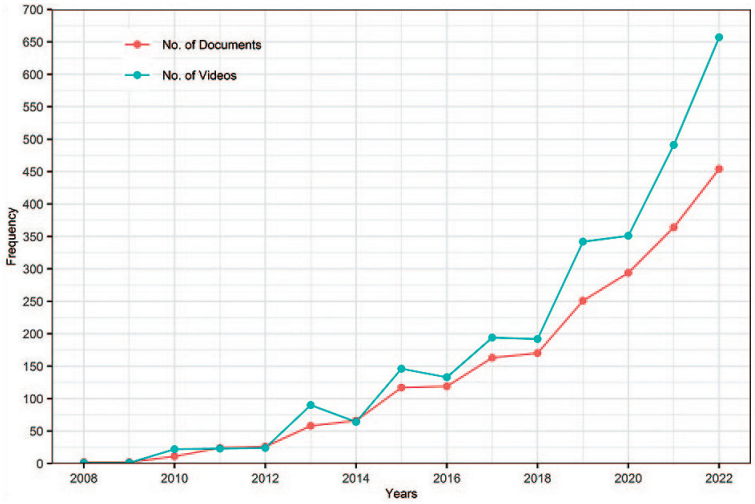

Figure 1. Yearly growth of YouTube citations across scholarly publications from India.

(677 publications; 17.16 %), Engineering (563 publications; 14.27 %), Arts and Humanities (287 publications; 7.28 %), Medicine (240 publications; 6.08 %), Business, Management and Accounting (202 publications; 5.12 %), and so on.

5.3 Type of Documents Cited Videos

This current study found that various types of documents used online videos as reference sources in the scholarly literature. The summary of the document categories is shown in Figure 3. The figure depicts that more than half of the publications are Journal Articles, the most preferred document type that uses YouTube videos, with 1,094 (51.58 %) publications. Followed by Conference papers, with 508 (23.95 %) publications; Book Chapters, with 246 (11.59 %) publications; and Review Articles, with 140 (6.60 %) publications.

5.4 World Cloud

The word cloud map is based on the occurrence of the author-provided keywords in the scholarly work that cited online videos presented in Figure 4. In total, 8,090 keywords are identified across 2,121 publications from India. To make the word cloud map, we considered keywords with a minimum occurrence of five times. The most frequently relevant keyword is learning. In total, 147 publications contain the term, followed by the terms India (129 publications), analysis (86 publications), detection (79 publications), social (77 publications), health (68 publications), COVID-19 (66 publications), and others.

5.5 Category of Cited Videos

By analysing the video category, we can understand the kinds of videos cited in Indian research publications. We used the YouTube category description framework

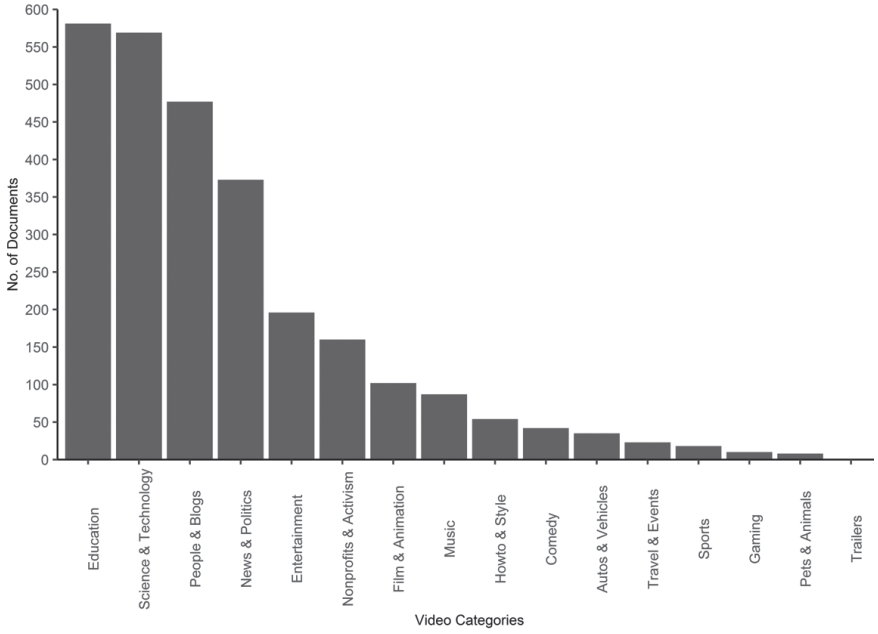

Figure 2. Number of documents as per scopus subject category that cited YouTube video.

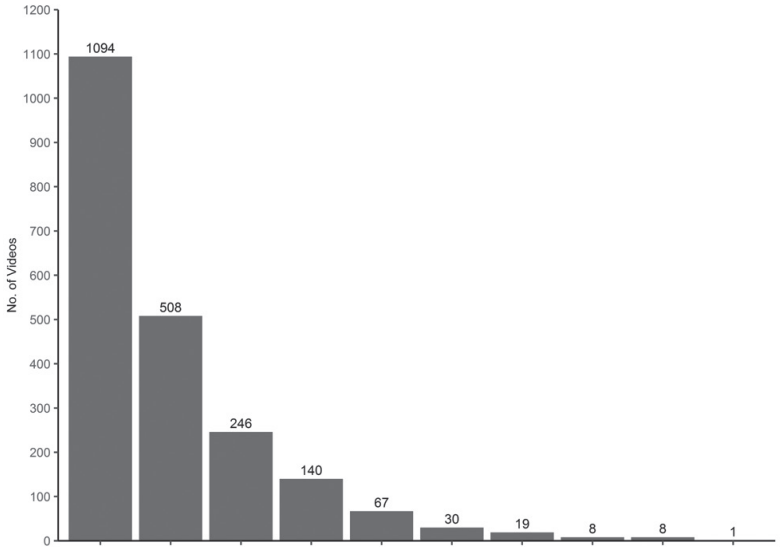

Figure 3. Type of documents that cited videos as reference sources.

Figure 4. Frequently used author keywords that cited online videos.

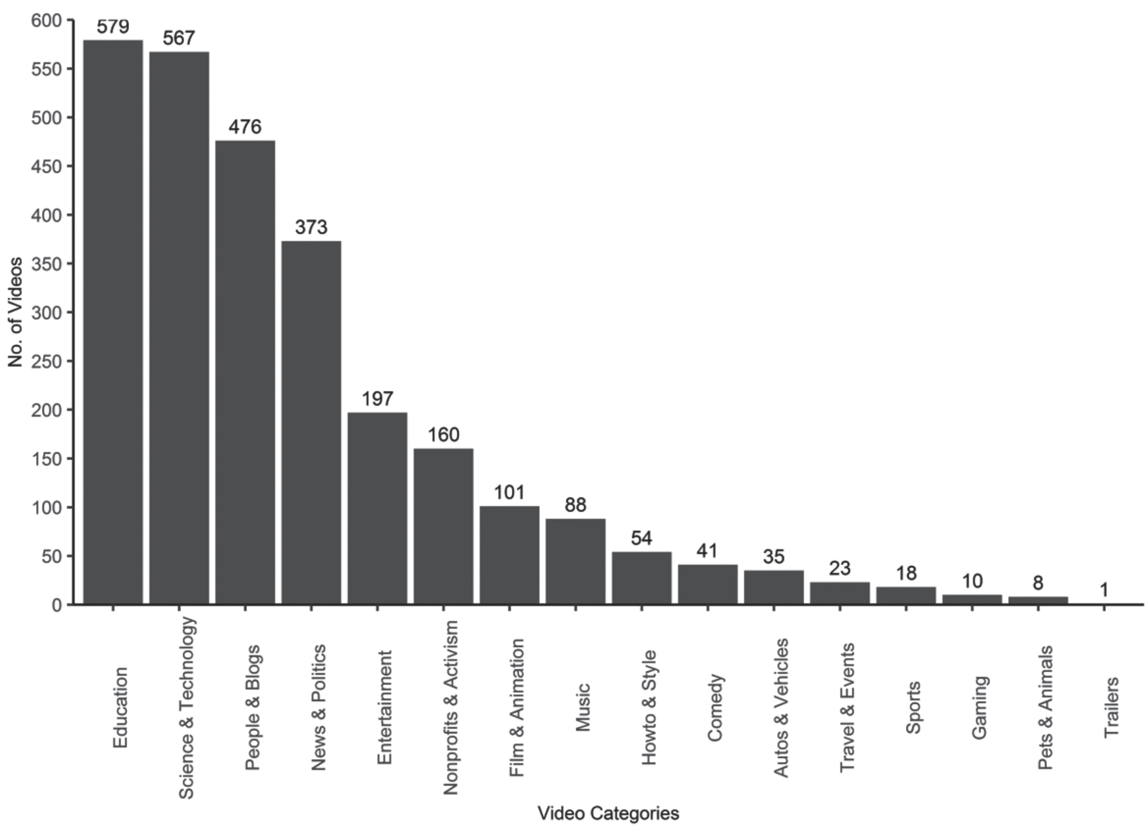

Figure 5. Categories of cited videos across Indian publications.

(https://mixedanalytics.com/blog/list-of-youtube-video-category-ids/) to extract the category of videos. A total number of 44 categories are listed there, having an ID of 1 to 44. The summary of the referenced video categories is given in Figure 5. We observed that most of the cited videos are listed under the " Education " category, having 579 videos, which is 21.20 % of the total cited videos—followed by the "Science and Technology" category with 567 (20.76 %) videos, "People and Blogs" with 476 (17.43 %) videos, "News & Politics" with 373 (13.66 %) videos. It is interesting to know that one article entitled "The fallible, the familial, and the fastidious: A critical analysis of three South Asian women-centric movies" cited a total of 8 videos; amongst them, one video (ID-QGrvd0i8sQg) has been cited from the "Trailers" category.

5.6 Highly Cited Videos

The videos cited more than two times in the Indian publications are presented in Table 2. We noticed that, amongst the top 16 cited videos, six videos discuss education-related information, five videos discuss medical and health-related information, two videos each discuss interviews of eminent personalities and product-related information, respectively, and one video is a blog (related to the COVID-19 pandemic). The fragrance brand Old Spice published a video entitled "*The Man Your Man Could Smell Like*", cited six times in the research publications made by Indian researchers. Five and nine videos hold the second and third position, respectively, with four and three cited videos.

5.7 Highly Cited Channels

This section presents the top-cited video channels cited in scholarly literature from India. The active list of 21 YouTube channels with more than six cited videos is shown in Table 3. These channels produce almost 10.36 % of total videos. The channel TEDx Talks ranks 1st in the list with 42 online videos. The second position in the rank list holds by NDTV with 38 videos, followed by Dr Soosan Jacob with 32 online videos, Aaj Tak (18 videos), James Gaskin (14 videos), nptelhrd (13 videos), meenakshi gupta (11 videos), and others.

5.8 Highly Video Cited Publications

We also analysed publication-wise video citations for Indian publications. The active list of the highly video-cited publications with at least 11 video mentions is in Table 4. Among these, six publications are journal articles, three publications are books, and two publications each are book chapters and review articles, respectively. The rank list led by a book entitled "Media Discourse in Contemporary India: A Study of Television News", published in 2022 by Prof. Sudeshna Devi, is the most highly cited online video, with 1.1 % of the total mentioned videos. The second position is held by a book chapter entitled "*AI-enabled collaborative learning: Indian higher education reimagined*", with 23 (0.84 %) cited videos. This was followed by two publications (one book, one journal article) entitled "*Public speaking for leaders: Communication strategies for the global market*" and "*Leader Motives, Impression Management, and Charisma: A Comparison of Steve Jobs and Bill Gates*" cited 19 online videos each.

6. DISCUSSION

YouTube is a popular online video-sharing site in the present-day context. A considerable number of videos are uploaded every day on the YouTube platform, irrespective of category. The present study analysed the online video material (specifically YouTube videos) cited in scholarly

Table 2. Top 16 most cited YouTube videos

S. No.	YouTube IDs	Channel title	Times cited	View count	Like count	Comment count
1	owGykVbfgUE	Old Spice	6	61567812	254189	27076
2	7TWu0_Gklzo	soundwaveimager	4	516100	498	65
3	EFCYu5QLBvU	ECHOCARDIOGRAPHY	4	13581	28	0
4	gnrAgNqpK8Q	Algebra Conversations	4	14631	355	33
5	nCJdws9CnUw	jamesplegg	4	2245	4	2
6	WPdIj9EBevo	John Davis	4	5426	244	17
7	Y7Le5Vb7_jg	James Gaskin	4	62891	206	244
8	aitqARyQkRQ	HTN	3	626	10	0
9	C4Yr_FTMdgQ	Kerala Health Online Training	3	1901	69	0
10	DrH-1505-Mg	vanetprivacy	3	64810	373	6
11	gjw8ZllIlbQ	Mahboob Rahman	3	105110	1085	0
12	j3mhkYbznBk	Tinkerin' Thinkers	3	1317528	12221	947
13	LooYoMM5DEo	KinsleyInc	3	8126	6	0
14	oTe_5IFgc7A	AffHealthTech	3	10927	30	1
15	Y9SqxoGP0V0	chamikadeshan	3	309	6	0
16	YHeyuD89n1Y	Open Networking Summit	3	48542	499	18

Table 3. Top cited video channels in the scholarly literature

S. No.	Channel title	Channel ID	No. of videos	Avg. view	Avg. like	Avg. comments
1	TEDx Talks	UCsT0YIqwnpJCM-mx7-gSA4Q	42	1103101.21	19629.64	503.76
2	NDTV	UCZFMm1mMw0F81Z37aaEzTUA	38	192353.53	3292.08	501.09
3	Dr. Soosan Jacob	UCgQesqB4VuECm4YGKpaZccg	32	2810	32.81	5.28
4	Aaj Tak	UCt4t-jeY85JegMlZ-E5UWtA	18	215586.56	936.39	15.11
5	James Gaskin	UCOMWLcopuV4xj8U3dePhVlQ	14	106103.86	406.71	256.14
6	nptelhrd	UC640y4UvDAlya_WOj5U4pfA	13	91417.7	330.31	24.85
7	Meenakshi gupta	UC1mYz8qvghHibLYU3HSKOZA	11	184.64	1	0.09
8	DeepLearningAI	UCcIXc5mJsHVYTZR1maL5l9w	10	120656.86	1910.7	45.1
9	TED	UCAuUUnT6oDeKwE6v1NGQxug	10	3609247.6	62473	2319.2
10	Dalit Camera	UCLCQXxHl_5iedP-tmNCUFPw	9	12952.89	153.22	12.44
11	Sriranjan Rasakatla	UCUW_s2RsOxQN0AZF4P5cV9Q	9	789.44	1.33	0.33
12	Stanford	UC-EnprmCZ3OXyAoG7vjVNCA	9	10111010.11	115459.22	6440.78
13	edureka!	UCkw4JCwteGrDHIsyIIKo4tQ	9	298220.75	5026.5	169.13
14	IIMBx_IS110x	UCpQYErsipSbik6SOmK-5VKA	8	395.63	0	0
15	India Today	UCYPvAwZP8pZhSMW8qs7cVCw	8	60977.5	667.5	216
16	Lilly Singh	UCfm4y4rHF5HGrSr-qbvOwOg	8	9941786	436564.5	28552.88
17	e-Yantra	UCWfSeyt5dV39luJknVQhFzA	7	2795.71	24.71	1.14
18	Jalayer Academy	UCTprjveyeUA-pn6b7KbGhmQ	7	78971.57	853	76
19	Narendra Modi	UC1NF71EwP41VdjAU1iXdLkw	7	141575	2490.57	75.71
20	Sue Rees	UCqGmGXQo9kOucMnqTXG1H6g	7	5237.29	34.86	1.57
21	TIMES NOW	UC6RJ7-PaXg6TIH2BzZfTV7w	7	32062.86	397.41	103.71

Table 4. Highly video cited publications by Indian scholars

DOI/ISBN	Cited videos	%
978-100323220-9	30	1.10
978-143318690-5	23	0.84
978-100041252-9	19	0.70
10.1177/0258042X13509736	19	0.70
10.1080/02560046.2015.1059553	18	0.66
10.22608/APO.2017158	17	0.62
978-131574293-9	16	0.59
978-100041479-0	16	0.59
10.1162/dram_a_00856	13	0.48
10.1504/IJEG.2021.119489	13	0.48
10.1080/02681102.2021.1920874	13	0.48
10.1177/0973258613512574	12	0.44
10.1177/20594364221116018	11	0.40

publications by Indian scholars. We searched the Scopus database to retrieve publications that mentioned an online video. In total, 2,121 publications with 3,191 online videos are found. Unfortunately, 460 videos were excluded from the analysis because of technical issues (incorrect IDs or withdrawal videos from YouTube). Finally, 2,731 videos are taken into consideration for further analysis. The methodology section has already discussed this study's first research question (RQ1). We found that OpenRefine can extract online video links from the reference section of publications using GRELs and fetch the desired data from the YouTube platforms using REST/API calls. This research is in the same line as the previous one by Nath & Jana[13] and Mazumder[17], *et al.*, as they used the OpenRefine tool for extracting and fetching metadata and related information from ODbL-based data sources.

Results indicate a tremendous growth of cited videos across publications during the study period. In 2008, the first publication was found to be cited as an online video, while the number of cited videos in 2022 was 657. However, during the last three years (2020-22), more than half of the videos are cited. This is because of COVID-19 outbreaks across the globe; most educational activities like seminars, conferences, and webinars are organised online (RQ2). Our research collaborates with the previous study by Kousha[9], *et al.*, as they noticed linear growth of cited videos since 2008. Still, Haunschild & Bornmann[4] saw exponential growth of cited tweets in scholarly literature. When we looked at the disciplinary coverage of cited videos, it was found that most publications come from the Computer Science, Social Science, and Engineering disciplines. By analsing the document types, we found that most of the publications that cited online videos are journal articles and conference publications. Surprisingly, we observed that amongst the document types, the frequency of publications is reduced by almost 50 %. For instance, the frequency of Journal Articles is

1,094, whereas for Conference papers, it is 508, nearly half of the Journal Articles. Similarly, book chapters are almost half of the conference paper. Various altmetric-based studies also showed decreasing trends to be mentioned on YouTube. For instance, an altmetric study of Indian Medical Science publications showed a decreased trend in research publications mentioned in YouTube videos[19]. The methodological approach of this research is totally opposite to the previous one, as they measure the research publications as sources of information. However, this research considered YouTube as a source of information.

We performed different analyses based on the cited videos to answer the third research question (RQ3). Firstly, the video categories confirmed that most videos come from the Education category, followed by Science & Technology and People & Blogs. Previous research also revealed the use of online videos for teaching-learning purposes across different domains[2,15]. Secondly, the frequency of cited videos reported that one manufacturer company video (ID: owGykVbfgUE) was cited six times. It is observed that the channel "jamesplegg" (ID- UCSOtO2K5uyI7SQA1lWzZsDw) published only one video (ID: nCJdws9CnUw) related to the impact of "Cassava Brown Streak Virus Disease (CBSD)" on farming communities in the north-western part of Tanzania, cited four times across publications.

Thirdly, it is noticed from the rank list of channels that we found different categories of channels. In contrast, five channels (James Gaskin, meenakshi gupta, DeepLearningAI, Jalayer Academy, and Sriranjan Rasakatla) produce recent technological development and education-related videos, four channels (NDTV, Aaj Tak, India Today, and Times Now) are the popular news broadcasting channels, two channels (edureka! and nptelhrd) are e-learning platforms, two channels (TEDx Talks and TED) are producing TED related videos, two channels (Stanford and e-Yantra by IIT-Bombay) from higher educational institutions, one channel each from medical (Dr. Soosan Jacob), comedy (Lilly Singh), film and animation (Sue Rees), public figure (Narendra Modi), and Dalit community (Dalit Camera). Interestingly, one channel (IIMBx_IS110x) ranked 14th with eight cited videos, but the like and comment count is zero. The reason is that the channel contains unlisted videos; all videos on this channel are private, and the links are shared only with desired researchers. One channel, namely, James Gaskin (ID: UCOMWLcopuV4xj8U3dePhVlQ), ranked in the fifth position in the channel rank list with 14 cited videos, but surprisingly, one video cited four times, also holds the seventh position in the highly cited list. This channel produced videos about statistical techniques for social science researchers. Fourthly, the high number of video-cited publications was also presented. The rank list leads by book publications because books are written to give in-depth information about a topic. Therefore, videos are cited to demonstrate audio-visual information. When looking at the duration of cited videos, we found that short videos (ten-second video: 3_7omfW7PYs) are cited as well as long videos (more than 8-hour video: 1XTiL9rUpkg) and also some live streaming which were being streamed for several years (like 911 days (ID: NMre6IAAAiU) and 1474 days (ID: CwriDd8STdI)) are cited by the scholarly community. It indicates that the duration of videos does not matter to be cited in research publications.

7. CONCLUSION

In this study, we have tried to analyse the cited videos in scholarly publications by Indian scholars. In total, 2,731 videos were taken into consideration for further analysis. Further, we extracted the details and descriptive statistics of video IDs from YouTube through Google API. Results indicate that over half of the videos are cited during the last three years. Major scholarly works that cite the videos are Journal Articles and Conference Papers. Although mostly educational videos are the major video categories that are cited. YouTube is currently the most extensive video repository in the world and is emerging as a significant source for educational and scholarly videos.

Besides the results mentioned above, this research also has some limitations. As a bibliographic data source, we focused on Scopus, which led to bias. Secondly, there are different formats of online videos, such as videos, shorts, playlists, etc. We only considered the videos; other forms are excluded in this study. Thirdly, as discussed in the introduction, users watch billions of hours of video content daily and produce billions of views. Therefore, the video statistics will change in due time. Fourthly, the content uploaded to YouTube is not static; at any time, it may be removed by the channel owner or YouTube developers.

REFERENCES

1. Allgaier, J. Science & Medicine on YouTube. *In* Second International Handbook of Internet Research, edited by J. Hunsinger; L. Klastrup & M.M. Allen. Springer, Netherlands, 2018, 1–21. doi: 10.1007/978-94-024-1202-4_1-1.
2. Bora, K.; Das, D.; Barman, B. & Borah, P. Are internet videos useful sources of information during global public health emergencies? A case study of YouTube videos during the 2015–16 Zika virus pandemic. *Patho. Global Health*, 2018, **112**(6), 320–328. doi: 10.1080/20477724.2018.1507784.
3. Gibney, E. JoVE journal's videos take the strain out of new science. *Times Higher Education,* 2013. https://www.timeshighereducation.com/news/jove-journals-videos-take-strain-out-of-new-science/2008288.article (Accessed on 17 April 2023)
4. Haunschild, R. & Bornmann, L. Which papers cited which tweets? An exploratory analysis based on Scopus data. *J. Inf.*, 2023, **17**(2), 1-11. doi: 10.1016/j.joi.2023.101383.
5. Jamali, H.R.; Nabavi, M. & Asadi, S. How video articles are cited, the case of JoVE: Journal of Visualised Experiments. *Scientometrics*, 2018, **117**(3), 1821–1839. doi: 10.1007/s11192-018-2957-6

6. Kalayci, M.; Cetinkaya, E.; Suren, E.; Yigit, K. & Erol, M.K. Are YouTube videos useful in informing patients about keratoplasty? *Seminars in Ophthalmology*, 2012, **36**(7), 469–474. doi: 10.1080/08820538.2021.1890145.
7. Kemp, S. Global Statshot Report. Digital 2023 July Global Statshot Report. https://datareportal.com/reports/digital-2023-july-global-statshot (Accessed on 15 April 2023).
8. Kousha, K. & Thelwall, M. News stories as evidence for research? BBC citations from articles, Books, and Wikipedia. *J. Assoc. Inf. Sci. Tech.,* 2017, **68**(8), 2017–2028. doi: 10.1002/asi.23862.
9. Kousha, K.; Thelwall, M. & Abdoli, M. The role of online videos in research communication: A content analysis of YouTube videos cited in academic publications. *J. Assoc. Inf. Sci. Tech.*, 2012, **63**(9), 1710–1727. doi: 10.1002/asi.22717.
10. Kousha, K.; Thelwall, M. & Abdoli, M. Which types of online evidence show the nonacademic benefits of research? Websites cited in UK impact case studies. *Quanti. Sci. Stud.*, 2021, **2**(3), 864–881. doi: 10.1162/qss_a_00145.
11. Li, X.; Thelwall, M. & Mohammadi, E. How are encyclopedias cited in academic research? Wikipedia, Britannica, Baidu Baike, and Scholarpedia. *Prof. de La Inf.*, 2021, **30**(5). doi: 10.3145/epi.2021.sep.08.
12. Madden, A.; Ruthven, I. & McMenemy, D. A classification scheme for content analyses of YouTube video comments. *J. Doc.*, 2013, **69**(5), 693–714. doi: 10.1108/JD-06-2012-0078.
13. Nath, A. & Jana, S. Data wrangling from socio-academic web-space: Designing a meta model. *J. Info. Knowl.*, 2023, **60**(2), 113–125. doi: 10.17821/srels/2023/v60i2/170971.
14. Orduna-Malea, E.; Thelwall, M. & Kousha, K. Web citations in patents: Evidence of technological impact? *J. Assoc. Inf. Sci. Tech.*, 2017, **68**(8), 1967–1974. doi: 10.1002/asi.23821.
15. Staziaki, P.V.; Santo, I.D. de O.; Skobodzinski, A.A.; Park, L.K. & Bedi, H.S. How to use YouTube for radiology education. *Cur. Prob. Diagn. Radiol.*, 2021, **50**(4), 461–468. doi: 10.1067/j.cpradiol.2020.11.007.
16. Tomaszewski, R. A comparative study of citations to chemical encyclopedias in scholarly articles: Kirk-Othmer encyclopedia of chemical technology and Ullmann's encyclopedia of industrial chemistry. *Scientometrics*, 2018, **117**(1), 175–189. doi: 10.1007/s11192-018-2844-1
17. Mazumder, J.; Nath, A.; Mukherjee, S.; Pakira, A.K. & Jana, S. Unveiling the hidden impact: Measuring alternative research impact of private higher education institutions of India through data carpentry. *DESIDOC J. Libr. Inf. Technol.,* 2023, **43**(6), 414-425. doi: 10.14429/djlit.43.06.19045.
18. Nath, A. Unmasking unconventional impact: Assessing research contributions of private higher education institutions (HEIs) in India through data carpentry. Zenedo. Pre-Print. 2023. doi: 10.5281/zenodo.8372464.
19. Mukherjee, S.; Nath, A.; Mazumder, J. & Jana, S. Does openness of articles get higher attention in altmetric? An investigation of medical discipline. *Global Knowl., Memory Commun.*, 2023. doi: 10.1108/GKMC-05-2023-0180.
20. YouTube for Press. Available at: https://blog.youtube/press/(Accessed on 25 May 2023).
21. NPTEL Channel. Available at: https://www.youtube.com/@iit (Accessed on 25 May 2023).
22. e-Yantra Channel. Available at: https://www.youtube.com/@eyantra (Accessed on 25 May 2023).
23. JoVE (Journal of Visualised Experiments) Channel. Available at: https://www.youtube.com/@JoVEJournal (Accessed on 21 May 2023).
24. Journal number theory channel. Available at: https://www.youtube.com/@Journal Number Theory (Accessed on 21 May 2023).

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